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THE USE OF AN AUREOMYCIN FERMENTATION PRODUCT ("AUROFAC") IN THE TREATMENT OF UNTHRIFTY PIGS

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Feeding experiments in America have shown that many cases of unthrifty or runt pigs can be successfully reared if vitamin B_{12} and antibiotics, particularly aureomycin, are added to the ration (Carpenter, 1950 ; Catron & Cuff, 1951). It has also been shown that enteritis and scouring in pigs due to an unknown but presumably dietetic factor have been arrested and cured by the same supplement.

During the past year many cases of bad thriving and diarrhoea leading to severe emaciation and death have occurred amongst pigs in the North of Scotland area. Various attempts have been made to account for and treat the condition with indifferent results. Following the successful American work, trials were conducted to see if similar success could be obtained here, and for the purpose we were kindly given a supply of "Aurofac" by the Lederle Laboratories. This is an aureomycin fermentation product guaranteed to contain not less than 1·8 grammes of aureomycin and 1·8 mg. of vitamin B_{12} per lb. The following is a report on one controlled trial with some observations on other trials.

Description of the Disease.—Affected pigs develop the condition at from 3 to 14 weeks old with the majority under eight weeks old. Diarrhoea is first noticed and the scour is usually greyish in appearance, similar to the scour associated with anaemia. In many cases it has been seen in pigs receiving adequate doses of iron and dosing with iron has merely acted as an astringent and arrested the diarrhoea for a few days. Wasting is usually rapid in spite of a ravenous appetite particularly noticeable in weaned pigs. It is uncommon for the whole litter to be affected and within a litter it is common for the loss of condition to be severe in a few, to be absent in a few and mild in the remainder. By weaning time, if no pigs have died, the litter appears characteristically to show one or two very good pigs, one or two very bad pigs and six or more pigs with poor weaning weights. The badly affected pigs are emaciated runts with consistently loose motions and a ravenous and depraved appetite. Clean water in drinking bowls is refused in preference for the stale urine lying in cracks and hollows in the floor. The pigs have the same clinical appearance and symptoms as cases of necrotic enteritis, the only difference being that the diarrhoea is not so severe and does not have the same evil smell. Most of the severely affected pigs die from intercurrent pneumonia or are killed by the owner. *Post-mortem* examinations have failed consistently to account for the diarrhoea and wasting. Examinations for Salmonella organisms have always been negative and lesions of disease in the intestines have been absent except for the presence occasionally of slight enteritis. Enlargement of the intestinal glands has been the only consistent feature. Pneumonia, pleurisy, peritonitis and pericarditis frequently have been seen in cases which have survived for several weeks. Many lines of treatment have been attempted, including dosing with sulphamezathine, sulphapyridine and yeast, but although these brought about a temporary improvement, the symptoms returned and persisted in spite of continued dosing. Changes in feeding were tried but also proved unsatisfactory in curing the condition. The best results amongst badly affected cases were obtained by turning the pigs out to free range on grass. Two badly affected pigs brought to the laboratory and given free range stopped scouring within a few days but it was many weeks before they began to put on weight, and even now at nearly a year old they have the appearance of pigs of about 20 weeks old. In the case of young pigs affected while suckling, dosing with iron preparations arrested the scouring temporarily—presumably from its purely astringent effect. The disease has not been seen in pigs reared outside but has been seen under both good and bad conditions of indoor husbandry ; it has been seen more frequently during the winter months. The severity on any one farm has varied from the total loss of seven consecutive litters on one farm (about 70 pigs) to the loss of 20 to 30 pigs on a farm where upwards of 30 sows have farrowed. On the majority of farms the mortality is low but there is a high proportion of unthrifty pigs and the litters at weaning are very uneven, and well below average weight.

REPORT ON FIRST TRIAL

For the purposes of our first trial with "Aurofac" a farm was chosen where the management, feeding and housing were reasonably good. The history on the farm was that during the previous year periodically one or more pigs in a good litter suddenly developed diarrhoea, stopped thriving and lost condition. Over a period of six months prior to the trial 20 such pigs had died and *post-mortem* examinations failed to demonstrate any cause for the wasting. On December 28th, 1951, six typical cases out of two litters were selected for the "Aurofac" supplement and six normal pigs from the same two litters were chosen at random as controls. Both litters were born on July 25th, 1951, so that the pigs were 22 weeks old when the experiment began. From weaning until a week before the test began the pigs had been fed on meal and boiled potatoes but for the period of the trial and the week before it potatoes were withheld and meal only supplied. One pig in the trial group died during the first week from debility and to balance the groups a pig from the control group was removed leaving five pigs in each group. "Aurofac" was given at the rate of ½ per cent. in the food and the quantity of food supplied daily was adjusted so that all the food was consumed at each feeding.

The table overleaf gives the fortnightly details of the total weight, average weight, weight gains from previous weighing and the food consumed.

Summary of the Result.—It was striking that during the first fortnight of the trial the unthrifty pigs, instead of losing weight, actually gained more weight than the controls (79 lb. compared with 71 lb.). During the test they made an average daily gain of 1·12 lb. using 3·2 lb. of food for each pound of live weight gain whereas the controls gained 1·04 lb. daily using 4·4 lb. of food for each pound live weight gain.

	"Aurofac" pigs (5)	Control pigs (5)
Total weight on 28.12.51	308	520
Average weight	61·6	104
Total weight on 11.1.52	387	591
Average weight	77·4	118·2
Weight gain on previous weighing	15·8	14·2
Food consumed since previous weighing	228	308
Total weight on 25.1.52	445	671
Average weight	89	134
Weight gain on previous weighing	11·6	15·8
Food consumed since previous weighing	224	302
Total weight on 8.2.52	516	730
Average weight	101·2	146
Weight gain on previous weighing	12·2	12
Food consumed since previous weighing	248	312
Total weight on 23.2.52	622	812
Average weight	124	162·4
Weight gain on previous weighing	22·8	16·4
Food consumed since previous weighing	308	362

Summary

Total food consumed	1,008	1,284
Average food consumed per pound gain	3·2	4·4
Weight gain during the eight-week period	314	292
Average daily gain in live weight ...	1·12	1·04

This first spectacular increase in weight was not maintained during the following six weeks but normal thriving continued and at the end of the trial the diseased pigs were normal healthy pigs. Had they been left untreated there is every probability that they would have died or been killed.

Report on Second Trial

The farmer in this case had lost a large number of young pigs before weaning from diarrhoea and wasting; survivors were unthrifty and took a long time to fatten. An influenza type of infection co-existed on this farm since in all the cases examined *post-mortem* there was severe pleurisy, pericarditis, peritonitis and some pneumonia.

Two groups of six affected pigs were selected. The pigs were survivors of several litters and varied in age from 12 to 16 weeks old. The object of this trial was to see if the beneficial results of feeding ½ per cent. "Aurofac" supplement for 14 days would be maintained afterwards without the supplement. No supplement was, therefore, added to the ration after the first 14 days.

The result is tabulated below.

	First weighing	Second weighing	Gain during first 14 days	Third weighing	Gain during second 14 days
Weights in lb. of six pigs in pen 1 ...	260	323	63	367	44
Weights in lb. of six pigs in pen 2 ...	248	318	70	348	30

It will be noted that, as in the previous trial, there was a spectacular response during the first fortnight. The pigs, instead of losing condition, actually gained weight at the rate of about ¾ lb. per day. It will be seen, too, that thriving continued, although at a lower rate, after the withdrawal of the supplement. Thriving continued thereafter normally on the ordinary meal ration.

Third Trial

A third trial was carried out on a farm near Banff, using younger pigs. The rearing history was similar to the history of the pigs in trial 2. "Aurofac" was again used at the rate of ½ per cent. of the food for a period of a fortnight only and four pigs in poor condition whose combined weight was 128 lb. were selected. The total weight gain during the fortnight when the supplement was being fed was 27 lb. and during the ensuing fortnight 21 lb. Normal thriving was continued afterwards on a commercial meal ration.

Further Observations on the Use of "Aurofac." — Since in many cases the scouring and loss in condition begin when the young pigs have not reached the stage of taking solid food, it was decided to see if the oral administration of "Aurofac" to suckling pigs would produce beneficial results. Twelve piglets in the early stage of the disease were chosen on the farm near Banff where trial 3 was conducted. They were given a level saltspoonful, approximately 0·35 gramme, of "Aurofac" powder daily for one week. "Aurofac" is a highly concentrated product and the dose of vitamin B_{12} and aureomycin given to these pigs at three weeks old was in the region of 0·0013 gramme aureomycin and 0·0013 mg. vitamin B_{12}. It was noticed that the diarrhoea was arrested within 24 hours and the slight loss in condition was made up within one week. There was no recurrence of the diarrhoea during the remainder of the suckling period when the pigs were kept under observation and at weaning the five litters involved were remarkably even. This was the first time that the farmer had had even litters at weaning for over two years and also the first time during the same period that he had reared all the pigs in the litters.

Summary

Three trials to test the value of "Aurofac" in promoting the normal thriving of runt pigs have been carried out with successful results, confirming work published in America. Two of the trials have shown that normal thriving on commercial meal rations was maintained after the withdrawal of the "Aurofac" supplement at the end of a fortnight. The cause of the diarrhoea leading to the unthriftiness has not been discovered but the condition is widespread in the North of Scotland area and has been responsible for serious losses on a large number of farms. No pathogenic bacteria have been recovered on *post-mortem* examinations. The oral dosing of affected suckling pigs with a saltspoonful of "Aurofac" powder has arrested the condition in the early stages and resulted in normal even litters at weaning time.

Acknowledgment.—Thanks are due to Lederle Laboratories Division, Cyanamid Products, Ltd., for kindly supplying the "Aurofac" used in the trials.

References

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Weekly Wisdom

What makes the majority principle compatible with liberty is the existence of a strong tradition, or formal safeguards, securing to minorities inalienable rights of free expression and the opportunity to persuade.—The Times.

CANINE BREEDING PROBLEMS

Breeding Cycle in the Bitch and Some Abnormalities

A REVIEW OF PRESENT KNOWLEDGE

(Contributed)

The bitch normally undergoes an oestrous cycle twice a year, and with natural mating infertility is a comparatively rare occurrence. This is due mainly to the long survival time of both ovum and sperm—the former, at least 48 hours ; the latter, up to 96 hours.

When infertility does occur it is more commonly the result of unduly protracted periods of anoestrus and, in some breeds, sexual frigidity, than of failure to conceive once mating has been accepted.

THE NORMAL OESTROUS CYCLE

Normally, under conditions of domestication, the oestrous cycle is completed twice a year, the oestrous periods occurring mainly during the months of March to May, and September to November ; there is no hard-and-fast breeding season. It has been found that in bitches kept under colony conditions, the oestrous cycle does not maintain a six-monthly periodicity, but varies considerably from 5 to 11 months.

The cycle may be divided into two periods according to the state of the ovaries :—

1. The follicular phase of developing and ripening follicles, which in turn is sub-divided into pro-oestrus and oestrus;

2. The luteal phase when the corpora lutea develop and persist, this being sub-divided into metoestrus and dioestrus (or anoestrus).

The ovarian phases are closely linked with changes occurring in the rest of the genital tract and with changes in the animal's behaviour which must be considered when diagnosing any abnormality in the cycle.

The Follicular Phase

Maturation of ovarian follicles under the influence of the follicle-stimulating hormone of the anterior pituitary is correlated with changes in the reproductive tract, leading to a state of sexual receptivity.

Assistance in the diagnosis of these changes may be obtained from the examination of smears from the vaginal mucosa, stained as for blood smears (*e.g.*, Giemsa, Leishman, etc.). One technique is as follows : After cleansing the vulva with spirit or cetavlon, a sterilised metal spatula is inserted into the posterior vagina just anterior to the vestibule and a smear taken and transferred to a slide. Heat fixation may be followed by staining with 1 per cent. methylene blue or fixation in methyl-alcohol by staining with Giemsa. Detailed descriptions of the findings are given under the respective headings—pro-oestrus, oestrus, metoestrus, etc.

(*a*) *Pro-oestrus.*—The ovaries show medium-sized follicles and sometimes traces of previous corpora lutea. There is an increase in tone in the muscle layers of the uterus and increased activity of the mucosal glands. Changes in the vaginal epithelium occur at the same time. Epithelial cells undergo rapid division and a smear shows nucleated epithelial cells, red blood corpuscles and polymorphs. A variable degree of bleeding is visible at the vulva, which becomes enlarged and turgid.

There is commonly increased excitability and decreased tolerance of other bitches and, although there may be some calling to the mate, often its near presence is not tolerated and mating is not accepted.

According to Amoroso, the duration of pro-oestrus may vary from 7 to 22 days ; the average appears to be about nine days.

(*b*) *Oestrus.*—Rupture of follicles and ovulation takes place. Ovulation is spontaneous and successive and occurs early in oestrus. It is accompanied by relaxation of the cervix (to allow the passage of sperm) and by further changes in the vaginal epithelium. The vaginal smears now show cornified desquamated epithelial cells, complete absence of leucocytes and continued presence of red blood corpuscles.

Externally, the vulval swelling becomes more flaccid. Bleeding may continue apparently unchanged or become rather less obvious, the discharge appearing salmon pink in colour. Some bitches do not show visible bleeding in oestrus. As this is the stage of actual acceptance of the dog, calling and attempts to escape are more pronounced.

Postural invitation to coitus is unmistakable. Handling the bitch over the loins and in front of the tail may cause adoption of the stance of mating, erection of the vulva and twisting of the tail to one side.

The average duration of oestrus is five days. It does not terminate until seven days after ovulation and the ova remain in the Fallopian tubes until the onset of metoestrus.

The Luteal Phase

(*a*) *Metoestrus.*—After rupture of the follicles has taken place, the corpora lutea form in the ovary under the influence of the luteinising hormone of the anterior pituitary and subsequently govern the preparation of the uterus to receive the fertilised ovum. The cervix closes, the uterine muscles become more flaccid and further endometrial proliferation occurs.

Vaginal smears show a flooding with leucocytes in very large numbers, and keratinised epithelial cells. Vulval swelling gradually disappears in about seven to eight days from the time of ovulation and the sanguineous discharge ceases.

In metoestrus, the histological changes in the uterus parallel those of pregnancy. Regressive changes are apparent by the 30th day but reversion to complete anoestrus is not complete before 80 days.

Behaviour will be considered in detail later, under the separate headings of pregnancy and pseudo-pregnancy.

(*b*) *Dioestrus or Anoestrus.*—This is a resting stage. The vaginal smears show a few nucleated epithelial cells and large numbers of leucocytes. Behaviour is characterised by an increase in liveliness and often a return to puppy habits and the desire to play.

Pregnancy Diagnosis

The existence of a normal pseudo-pregnant stage during metoestrus makes external symptoms unreliable in the recognition of pregnancy. No biological test gives any assistance and one must depend on the recognition of foetal units or foetuses by palpation or other means, *e.g.*, the use of X-ray.

Palpation of foetal units through the abdominal wall has been described as the only accurate method of *early* pregnancy diagnosis although behaviour and mammary development should be taken into account.

General Symptoms and Behaviour.—Behaviour tends to become quieter, although often there is a particularly obvious appearance of good health. There is a tendency in the normally undemonstrative bitch frequently to seek human company and appreciate attention. Occasional slight shivering and an inclination to seek warmth may be observed.

XUM

Appetite shows considerable variation. It may be suppressed in the early stages and increased later, although cases have been met of suppression of appetite after the fifth week. Thirst is increased and tastes for unusual foods may be manifest.

Early deposition of fat, especially over the ribs, occurs, and there is an appearance of broadening over the area of the last few ribs. Increase in bodyweight and abdominal distension become increasingly obvious during the last three weeks of pregnancy.

Symptoms due to increased intra-abdominal pressure may be obvious from the fourth to the sixth week onwards, *e.g.*, frequency of micturition, desire for frequent small meals, belching, grunting, etc. These may subside temporarily at the period when the uterine horn doubles over on itself (35th to 42nd day) only to return later with further increase in the size of foetuses and amount of foetal fluid.

Changes in the teats will be observed from the 21st to the 35th day, especially in primigravida. They become bright pink in colour, very turgid and obvious. This state persists until about the 45th day, when they become larger, softer and tumefied.

The time of observable hypertrophy of the mammary gland varies within wide limits. By the time of parturition the mammary glands have enlarged to an elongated turgid mass on each side of the abdomen.

A transparent, watery secretion may be present three to four days before whelping and milk may be secreted up to one week in advance of parturition. Visible vulval discharge during pregnancy is clear and very tacky, as opposed to the cloudy-white discharge often seen in phantom pregnancy.

Pregnancy Diagnosis by Abdominal Palpation.—Early pregnancy diagnosis by palpation depends on the recognition of foetal units as a series of swellings along the uterine horns. Later, the foetuses themselves may be felt.

It has been stated that the 18th to 21st day is the earliest period for positive diagnosis (in a thin bitch), at which time in the 20 lb. bitch foetal units are oval, tense swellings about ½ inch long by ⅜ inch broad. The easiest to palpate are the posterior ones just in front of the uterine body. In the bitch gravid with only one or two foetuses, foetal units may be impossible to palpate owing to their situation far forward under the costal arch where the mass of abdominal contents is too broad to allow them to be distinguished accurately. Faeces present in the colon may confuse the picture and if necessary an enema should be used for their removal prior to palpation.

By the 24th day, the swellings have become spherical and by the 30th day in the 20 lb. bitch they are ¾ to 1 inch in diameter. The 28th to 30th day is considered by some to be the optimum time for the detection of pregnancy although others prefer to make only a tentative diagnosis at this stage and await confirmation at seven weeks ; a single or twin pregnancy in a fat bitch may still be difficult or impossible to detect. (*N.B.* Some say 21 days is the optimum time for the detection of pregnancy.)

Pentothal anaesthesia to obtain abdominal relaxation may be considered in cases where diagnosis is important.

At about the 35th day, the constricted parts of the cornua start to dilate, there is considerable increase in foetal fluid and the tension disappears locally. Foetuses are not yet palpable and at this stage pregnancy is very difficult to detect and differentiate from a moderate degree of pyometra.

From the 49th day foetuses attain a size which allows them to be palpated and the abdominal distension becomes more obvious. Pregnancy diagnosis should be fairly easy from the 50th day in all but the very fat bitch. At this stage in a small fat subject, or one in which the abdominal wall is very tense, it may be possible to detect a foetus per rectum. The foreparts of the bitch should be raised and the foetal head may be felt, or anaesthesia may be resorted to.

From the 56th day abdominal distension, active mammary hyperplasia, and detection of foetuses by abdominal or rectal palpation render diagnosis easy in the majority of subjects pregnant with more than two foetuses. It is difficult even up to full term to differentiate the single pregnancy in a fat or tense subject from an exaggerated phantom pregnancy.

Other Methods.—X-rays are of value from the 49th day onwards when the bony foetal skeleton becomes apparent. Repeated exposures should not be made owing to the possibility of endangering foetal life, though this is not recognised universally as a risk.

Detection of foetal hearts with the stethoscope may assist from seven weeks to full term. Its greatest use, however, is as a test for foetal viability in an already confirmed pregnancy.

ABNORMALITIES OF THE OESTROUS CYCLE

Phantom Pregnancy

While all non-pregnant bitches go through the normal metoestral uterine changes, in many subjects the accompanying symptoms may be so marked as to simulate normal pregnancy or to give rise to psychological nervous derangement.

The early deposition of fat occurs and spreading of the ribs is noted as in true pregnancy. An apparent abdominal distension may be observed, which tends to disappear abruptly at about the 50th day. Mammary development may be considerable although the early turgidity of teats is usually absent. Vaginal discharge, if present, is milky and less viscid than in pregnancy.

From the 60th to 70th days, marked symptoms of apparent approach to parturition may be seen, *e.g.*, bed making, restlessness, panting, shivering, and a tendency to hide under any overhanging object. Nervousness and bad temper, verging on hysteria, may be features of this stage. This is followed, during the normal sucking period, by a tendency to take bones, toys, etc., to the bed and guard them jealously. In extreme cases, there may later even be vomiting 20 minutes or so after taking food, as in the physiological vomiting of the bitch weaning puppies.

Treatment.—Severe cases, having milk present, will make useful foster mothers if given puppies from another bitch and, where possible, this course gives the quickest relief from the psychological and physiological upset. Use of oestrogens, *e.g.*, stilboestrol, may be adopted to counteract excessive luteal influence. In extreme cases sedatives and purgatives may be indicated to relieve hysterical symptoms. In mild cases no treatment is indicated.

Silent Heat

Cases are not infrequently met in which oestrus occurs with a complete absence of visible bleeding. Such heats may occur at the normal time or at any time after the end of metoestrus. Their import to the breeder is obvious since they may result either in an undesirable mating or in missing the appropriate period for mating. Matings in silent heat at the choice of the bitch are almost invariably fertile.

If silent heat is suspected, diagnosis may be established by (1) trial with a dog for acceptance, which is usually manifest ; (2) vaginal smears revealing some red blood cells.

Treatment.—The question of treatment does not usually

arise, although if the bitch shows any tendency to accept, mating is advisable since it may re-establish the normal cycle. If silent heat occurs habitually at the normal time, attempts may be made to increase visible signs by the use of oestrogens.

Sexual Frigidity

In some breeds, particularly the orientals, sexual frigidity is a frequent occurrence. It is also occasionally met in pet bitches whose sexual instincts have to some extent been sublimated. It does not bear any relation to the extent of visible symptoms of oestrus, which may be very obvious, nor, very often, is there any decrease in the desire for the presence of the male but acceptance of mating is not manifest.

Treatment.—Administration of luteinising hormone to make sure of ovulation has been advocated. Leaving the dog and bitch together for prolonged periods, provided the bitch does not show any animosity to the presence of the male, may stimulate natural acceptance. The remaining alternative is to control the bitch and force her to accept mating, preferably on a number of occasions, until she actively resists or the male loses interest, since the absence of natural acceptance makes the assessment of the optimum time of mating difficult.

False Heat

The condition known by breeders as false heat covers two entirely separate entities :—

(*a*) In a few cases, red blood cells appear in vaginal smears or visible bleeding occurs immediately after the end of metoestrus, cf., menstruation. The bitch may be attractive to the male but will not accept mating and does not ovulate. No treatment is indicated ;

(*b*) The bitch at the normal time for oestrus shows the early pro-oestral symptoms but ovulation does not occur and pro-oestral symptoms fade, often only to recur. Such cases, in the adolescent particularly, may be due to the luteinising hormone of the pituitary being insufficient to effect full maturation of the follicles. Treatment suggested is the administration of chorionic gonadotrophin to induce ovulation and true oestrus.

Prolonged Heat

Cases may occur in which, although acceptance is reached, heat is unduly prolonged thereafter. In such cases the administration of luteinising hormone usually will be sufficient to cause ovulation and termination of heat in seven to eight days.

Cystic Ovaries—Nymphomania

Continued failure to ovulate and the development of thick-walled cysts in the ovaries can lead to a state of complete nymphomania. Such cases are usually highly nervous, bad-tempered, and inclined to fight other bitches and also dogs. There is a continual vulval bleeding or possibly a very viscid, tarry, reddish-brown discharge. Luteinising hormone, if used early, has been claimed to produce a cure but in some cases response is absent or only temporary. The administration of corpus luteum extract reduces severity of symptoms but does not cure the condition. In those cases which do not respond to luteinising hormone, therefore, resort must be made to ovariectomy. In the pet bitch, not wanted for breeding, ovaro-hysterectomy is usually performed. If the condition on laparotomy is found to be unilateral, the removal of the affected ovary only may allow the bitch to continue to breed.

Pyometra

The condition known as pyometra is not often a breeding problem, since it more frequently occurs in the older bitch, but it is important to differentiate it from cystic ovaries. The term "pyometra" has been used rather loosely to cover a group of conditions in which there is enlargement of and/or discharge from the uterus. Cystic ovaries, when accompanied by a cystic endometrium and a brownish vaginal discharge containing leucocytes as well as blood, have come within the meaning of the term, as also has an endometritis occurring at any time other than post-puerperal. Many, however, prefer to narrow the classification to cover only that condition occurring in early pseudo-pregnancy, characterised by acute toxaemia ; an accumulation of yellowish-reddish brown fluid in the uterus and a cystic degeneration of the uterine mucosa ; corpora lutea but no cysts are present in the ovaries. The uterus may or may not become secondarily infected or remain sterile. The os may be open or closed.

Treatment.—Success has been claimed for the use of oestrogens in the treatment of the open case. Stilboestrol, however, may precipitate the toxaemia, and the increased vascularity of the uterus and broad ligament is undesirable in cases which have subsequently to be operated upon. Ovaro-hysterectomy is usually performed. Where cystic ovaries are suspected, L.H. might be used.

Prolonged Anoestrus

This is probably the greatest single cause of temporary infertility in the bitch. Many bitches regularly come into season at eight-monthly or 12-monthly intervals, involving an unduly long wait between litters if mating is missed or conception does not occur. Some individuals have varying intervals between seasons and may go several years without visible signs of oestrus. In the case of the pet bitch not wanted for breeding there is generally no obvious deviation from health and until more detailed knowledge of the effects of the various hormones is available it seems inadvisable to treat such cases unless they are accompanied by symptoms of general hormone and thyroid deficiency, *e.g.*, obesity or alopecia. In the latter event thyroid or thyroid-whole pituitary may assist the general symptoms but will probably have no effect in stimulating oestrus.

Results of treatment of anoestrus with hormones are variable since the state of the ovaries before treatment is not known accurately.

Stilboestrol, in graduated doses of 0·05 mg., 0·1 mg., 0·2 mm. and 0·5 mg. at four- to five-day intervals, has been found to induce a complete oestrous cycle in parous bitches when heat has been delayed, but results are much less reliable in the maiden animal.

Pregnant Mares' Serum—200 to 300 I.U., given as a single dose or as divided doses of 100 I.U. at four-day intervals, has failed to produce heat in maiden bitches although it may succeed in the parous subjects. Luteinising hormone may be used subsequently to induce ovulation although if the dose of P.M.S. is correct the anterior pituitary probably will produce its own luteinising hormone. The dose of L.H. suggested is 200 I.U. per 60 lb. bodyweight. Considerable danger of over-stimulation arises from excess dosage with P.M.S., resulting in the suppression of ovulation.

As visible external signs of heat may not be obvious, repeated trials for acceptance and stimulation of interest by the dog should be made.

CANINE HYSTERIA OF DIETETIC ORIGIN

[Contributed]

Canine hysteria is one of the group of epilepsies to which the canine brain appears to be particularly prone. In this disorder there is a temporary derangement of functioning of the brain but no permanent damage is inflicted. This derangement results in abnormal behaviour on the part of the dog, usually manifested in one or all of the following forms—apprehension or fright, running and barking attacks, or convulsive seizures.

The chief primary cause is a hysteriagenic substance in the diet, but other ingredients may also play an important part in promoting brain disturbances.

Occurrence

The disease has been known for many years, and accurate descriptions of the complaint date from 1850. At that time it was usually called epilepsy and there seems little doubt that many cases were diagnosed incorrectly as rabies. With the stamping out of the latter in the British Isles towards the end of the last century, canine hysteria became recognised more clearly as a separate entity. The term hysteria seems to have been first given to the condition in Great Britain about 1890. Since the turn of the century the disorder has been recognised in the United States, where it is known as fright disease : it is rare in France and Germany, but has been prevalent in Holland since the mid-1920s, while it is not uncommon in Australia.

Dogs and bitches of all ages and breeds are susceptible. Young adolescent animals are definitely more liable to the condition, especially at the time of eruption of permanent teeth. While highly bred pedigree animals are said to be more prone, there is no adequate proof of this contention, nor is any breed affected conspicuously. Heavy worm infestation or the presence of parasites in the ear may act as contributory causes.

Cause of the Disease

Many theories have been propounded to explain canine hysteria ; the presence of worms in the bowel, foreign bodies in the stomach, constipation, impacted anal glands, parasites in the ear, infection, hereditary predisposition and, of course, the diet, especially certain samples of dog biscuit. Most of these theories are devoid of any factual basis, but a little more is known now concerning the dietary factors which can be responsible for canine hysteria. Much of the confusion has arisen owing to the many different stimuli which are on occasion related to an hysterical attack.

The major problem is to determine those factors which can set up a state of hysteria-proneness, and, if continued, hysterical attacks in a dog. These are the primary hysteriagenic factors and by far the most important one is the diet, especially included wheat products.

Motor episodes may develop through a variety of secondary precipitating and other factors which of themselves have no primary hysteriagenic activity. Thus we may distinguish between primary hysteriagenic factors, which can of themselves induce all the signs of hysteria, and secondary hysteriagenic factors, which do influence the occurrence of the clinical signs of the disorder, but which of themselves are quite unable to set up hysteria.

1. *Primary Hysteriagenic Factors.*—The best known ones are dietary, although it seems possible that local functional damage to the central nervous system, or even innate predisposition, may be important. It has long been recognised both in this country and the United States that certain batches of baked dog foods or biscuits containing a large proportion of wheat and wheat offals were potent inducers of hysteria. The exact nature of the dietary trouble has been the subject of much debate and inconclusive investigation. Deficiencies of vitamin A, vitamin B_1 or lysine, either alone or combined with deleterious substances, have all been both championed as causative agents and discarded as manifestly ineffective. Many nebulous noxious substances, such as pollen contaminants of flour, have been put forward, but the contentions of their advocates have not withstood critical examination. Similarly, the suggestion of a vitamin B_6 deficiency has not been substantiated.

During the last 10 years a more solid basis of fact has been built up from a number of experimental studies, which provide information illuminating many apparently contradictory clinical observations. These experimental studies have established the important rôle played by wheat products and the presence of a positive noxious chemical agent in certain wheat products as one of the main primary hysteriagenic factors. Canine hysteria will occur on diets containing such an agent, provided it be ingested in quantities sufficient to exceed the minimum daily dose tolerated—for animals will tolerate, without showing any clinical signs, comparatively large amounts of the affected wheat product. The diets used have been complete in all factors known to be necessary for good health in the dog, and there has been no question of a deficiency of any of the known nutritional substances.

Recent studies in the United States and in Britain suggest that the hysteriagenic properties of diet containing wheat products are due largely to the incorporation of wheat flour which has been treated by the "agene" process, a trade practice whereby the natural maturing process of the milled flour is hastened by exposure to small concentrations of nitrogen trichloride gas. The exposure of a number of protein materials to concentrations of this gas much larger than those normally employed in the milling industry, produces in these materials toxic substances which when fed to dogs are responsible for nervous signs not dissimilar to those of naturally occurring canine hysteria. However, there seems some doubt whether the syndrome produced by feeding agenised foodstuffs is identical with canine hysteria as met with under natural conditions, and until further studies have been carried out it seems unwise to blame any large proportion of natural cases upon the consumption of agenised foods. Furthermore, there are well-authenticated cases of the disorder occurring in kennels of dogs fed on maize and meat and even on predominantly meat diets. These aspects of the problem have not yet been submitted to experimental investigation.

2. *Secondary Hysteriagenic Factors.*—These are the factors which may actually set off hysterical attacks in a dog which is already in a hysteria-prone condition.

It is well known that many attacks of hysteria are precipitated by some sudden noise, such as the back-firing of a motor car, a passing motor bicycle or the passage of a train over a bridge under which the dog might happen to be at the time. In the normal animal these agencies produce no untoward effects, but in the animal sufficiently hysteria-prone they are sufficient to initiate an attack. Similarly, the hysterical barking of an affected dog may serve to set off all the dogs in the kennel ; in other cases excitement may do this, or the fact of presenting the dog with a situation of emotional significance to it, *e.g.*, the scene of a previous fight ; in one special case the upturning of a certain flower put on the lawn precipitated attacks. Disturbances in the alimentary tract, *i.e.*, the presence of large bones, stones or

balls, and heavy infestation with round worms in young puppies, may possibly be enough to precipitate hysterical outbursts.

The so-called internal metabolism of the body can aid or retard the occurrence of motor attacks. Thus the accumulation of water in the body, especially if little salt is being consumed, or a diet in which most of the calories are provided by the carbohydrate portion and but few from fat, both tend to render a hysteria-prone animal more so.

Lastly, the temperament of the animal plays an important rôle ; it is difficult to say just which types are more likely to be affected, but, in general, dogs with excitable temperaments are those affected first.

Diagnosis

In the simple cases in older animals recognition of the malady can be quite straightforward, but in young dogs, especially when infectious diseases of the "distemper" group are prevalent, the possibility that the initial nervous signs suggestive of canine hysteria may be the harbingers of a more extensive inflammation of the brain, must always be borne in mind.

Clinical Signs.—These can be divided conveniently into three : the stage of prodromal anxiety or hysteria-proneness ; the stage of motor attacks or running and barking—the so-called "running-barking fit" ; and convulsive seizures. All these stages may not be exhibited by any one case.

During the stage of prodromal anxiety the animal is apprehensive ; its ears are laid back and often it hides in dark corners or under low furniture. This stage may persist alone for days or weeks without other signs ; on the other hand, in some cases it is absent and the motor attacks, which are the principal clinical feature of the syndrome, may occur suddenly without any premonitory apprehension.

The motor episodes are often extremely alarming to the owner. They take two forms, either or both of which may occur in a single attack. The commoner form is the well-known running, barking "fit," during which the animal runs violently, and often for long distances without apparent fatigue, failing to answer calls or respond to the usual approaches of its owner. It will run into furniture or other objects normally well known to it, but rarely or ever into large solid obstacles such as walls and it may travel miles without accident. In a confined space the animal will make frantic efforts to get out.

The other form of motor attack is the convulsive seizure which may occur during or after a running fit, but more usually precedes it. The convulsion may or may not be preceded by premonitory signs, such as a sudden high-pitched howl. It begins as a sudden general rigidity of the muscles of the neck and limbs, these being in an extended position, although occasionally the hind limbs may be held against the abdomen ; respiration stops and the animal, now unconscious, falls on to its side. After 15 seconds or so the limbs make running movements, and respiration recommences. During either phase there is involuntary voiding of urine and faeces and the pupils are opened widely. The clonic phase rarely lasts longer than a minute, when the animal may get up as if nothing has happened, although, if the attack has been severe, there may be some signs of exhaustion. More frequently a running fit follows immediately the animal has recovered from a convulsion.

The dog often appears outwardly normal immediately after these attacks ; however, on close inspection it will be noted that the animal is not fully aware of its surroundings nor does it take notice of its owner's advances. This stage is frequently transient and since the signs are not very prominent, it is sometimes overlooked.

One attack of hysteria does not necessarily render an animal less liable to others, although it is uncommon to have a series of attacks repeated at very close intervals ; neither does one attack necessarily mean that an animal will have more—beyond, of course, indicating that the animal, although often it appears normal in every way, is in an hysteria-prone state, *i.e.*, in a condition in which motor attacks may occur.

Therapy and Management

Hysteria-prone animals should be kept as quiet as possible in a dimly lighted place. The severe hysteria-prone states and the motor episodes may be controlled by sedatives, *e.g.*, chloral, or drugs of the barbiturate group.

Special attention should be given to the diet. If wheat products have been largely used, they should be curtailed and replaced where possible with other cereals and meat. If a special batch of dog biscuit is suspected, a change to another batch or merely another bag may prove effective. Wherever possible a mixed diet of natural foods should be fed with as much fat as possible, adding plenty of salt and a dessert-spoonful of sodium bicarbonate. In the case of working gun-dogs sodium bicarbonate by mouth prior to the day's work may prove of value. If there is any suspicion of constipation a thorough purge or an enema should be given.

CLINICAL COMMUNICATION

AN EPIPHYSEAL INJURY TO THE UPPER END OF THE TIBIA (DOG)

W. J. TARVER, M.R.C.V.S.,
AND
G. H. PIMBLETT, M.C., M.B., CH.B.

Subject.—A pointer Labrador-cross dog, aged seven months.

History.—Struck by a Public Service vehicle.

Examination.—There was great pain in a hind leg which was swinging, considerable upward displacement of the patella, but no obvious deformity, abnormal mobility, or crepitation. X-ray examination revealed separation of the tibial tuberosity and a segment of the epiphyseal plate. The unopposed pull of the extensor tendon had drawn the patella in an upward direction.

Prognosis.—This was considered poor for the following reasons:—

(1) The nature of the injury was such that accurate reposition was essential to ensure good functional recovery of the extensor mechanism of the joint.

(2) There was probable interruption of the articulating surface of the tibial table. Without securing a smooth surface by accurate reduction there would be danger in the future of development of a severe and early degenerative arthritis of the joint. This risk would be increased by immobilisation.

(3) In view of (1) and (2) mentioned above, internal fixation of the displacement by open reduction seemed to be the best method of treatment. Unfortunately, operation carries a great risk of subsequent joint infection and almost certain premature epiphyseal fusion.

In view of the above, it was decided to attempt closed reduction and fixation in plaster with X-rays fortnightly to check progress.

Treatment.—Under nembutal anaesthesia a length of 6-inch bandage was passed round and above the hock and pulled forward so that the leg was at 90° to the trunk. Another length of bandage was passed round the femur

above the patella, pulled backward and downward and secured. The injured limb was now in a position of hyper-extension with the patella pulled well down and the patella ligament relaxed. Positioning was checked as well as possible and plaster built up over the retaining bandages, particular attention being given to the groove caused by the bandage over the patella. The bandages were then cut close to the limb and the plaster completed.

Progress.—In three days, a little weight being put on the limb, the animal was returned to his owner. Ten days later the dog, having chewed off the plaster, was brought back. A plaster sore over the patella was dressed and the limb immobilised, using splints and bandages. Nothing further was heard for four months when it was learned that the dog had removed the dressing the same night that it was applied, and the owner, deciding to try radical treatment, took the animal on a grouse drive the following day. Thereafter the dog made an uninterrupted recovery and when last seen showed no sign of lameness or deformity.

Discussion.—Search of the literature shows that this type of injury is of fairly frequent occurrence, especially in the rachitic dog. As little detail is given of treatment or progress it would appear that the grave prognosis is usually accurate. This case is considered worth recording because, in spite of the disruption of the extensor mechanism of the limb, and the intolerant behaviour of both patient and owner, function was restored completely in a remarkably short period of time. At first so severe was the pain and so grave the prognosis that euthanasia was decided upon, until detailed discussion of the various methods of treatment of this type of injury in the human species resulted in the adoption of an alternative line of approach.

Summary.—An epiphyseal injury to the tibia is described in which complete functional recovery followed an extremely short period of immobilisation.

REVIEW

[Swine Management. By Arthur L. Anderson (Professor of Animal Husbandry, Iowa State College). Edited by R. W. Gregory. Published by J. B. Lippincott Co., Chicago, Philadelphia, New York and London: Aldine House, Bedford Street, W.C.2. Price 32s.]

This book is one of an Agricultural Management Series and, as the title indicates, does not profess to be a text-book for the veterinarian. In these days, however, close association of management and feeding with pig disease problems has come to be widely accepted. Thus a thorough understanding of the methods of pig rearing is essential in providing a remedy for many of the commoner pig ailments.

This publication is quite comprehensive, covering all phases of the pig's life. It includes a number of very useful chapters on feeding, with special reference to the different food factors and how the lack of these may have a serious effect upon health. In this respect the chapter on mineral and vitamin supplements will be of particular value. That on the control of diseases of parasites is brief and is but a general guide to the pig-keeper, providing him with the elements of diagnosis and indicating what can be done under certain circumstances where disease has broken out. Breeding, marketing and slaughtering are considered in some detail and a section on housing has much of interest to the keeper of pigs in these islands. Throughout, the book is extremely well illustrated and would provide a valuable source of reference for anyone in any way associated with the pig industry.

ABSTRACTS

Bracken Poisoning in the Horse*

At the outset it is made clear that "staggers" in the horse may be due to several different aetiological factors. Thus, ragwort poisoning is manifested by a staggering gait and general inco-ordination and so merits the designation mad-staggers. Bracken poisoning, on the other hand, merits the designation sleepy staggers. There are a number of records of bracken poisoning in horses relating to various parts of the world. Though well known to farmers and veterinary surgeons in Wales, bracken poisoning in horses has been the subject of few specific references in British veterinary literature. Bracken poisoning in horses does not seem to have been recognised in Scotland though poisoning of cattle is known as a source of serious loss. Bracken poisoning of horses in Wales has mostly been encountered in housed animals, the fodder being contaminated with bracken or if the horse has developed a taste for it, bracken used as bedding. Some cases have occurred from horses eating green bracken on grazings.

The first sign noticed is an uncertain gait. The gait deteriorates and the animal has difficulty in maintaining posture. It becomes recumbent and the final stages are marked by convulsive seizures. Prognosis is said to be good if the animal is seen in the early stages and the offending fodder is withdrawn in favour of a laxative diet.

The experimental production of bracken poisoning in the horse by Hadwen and Bruce in 1920 is described. Poisoning in the horse is considered to be due to an anti-neurine factor (thiaminase) in the plant. Experimental work was, therefore, undertaken to study the development of avitaminosis B_1 in bracken poisoning, the blood level of aneurin being estimated: haematological and electrocardiograph studies also being carried out. A five-year-old cart-mare in good condition was fed a 50 per cent. bracken-hay mixture for 24 days and then a bracken-hay mixture containing 75 per cent. of bracken. Seven days after starting to feed the 75 per cent. bracken mixture, the horse began to show signs of illness. For 12 days after the illness commenced the animal was kept on the 75 per cent. bracken mixture and aneurin therapy was applied daily. The animal improved and the diet was changed to 50 per cent. bracken, aneurin therapy being withheld. In 20 days the animal's condition was again deteriorating. It collapsed seven days later, and in spite of aneurin therapy died the following day.

The biochemical studies showed that during the period of illness there was a very marked decrease in the aneurin level paralleled by an abnormally high pyruvic acid content of the blood. The blood picture showed an early leucocytosis followed by fluctuations and a return to normal. Electrocardiograph records were suggestive of myocardial insufficiency or coronary ischaemia.

Two naturally occurring cases of bracken staggers in ponies were studied. These showed a low blood aneurin level and responded to two subcutaneous injections of 50 mg. of aneurin.

The article concludes with an extremely interesting discussion of the modern literature dealing with bracken poisoning.

G. F. B.

* **Studies in Bracken Poisoning in the Horse.** Rees Evans, E. T., Charles, W., & Roberts, H. E. (1951.) *Brit. Vet. J.* **107.** 364-371 and 399-411 (30 refs., including a note of the treatment of a naturally occurring outbreak of bracken staggers in ponies, by W. Morris-Jones).

Effect of Bacterial Infection on the Milk Yield of Individual Quarters*

The information recorded was collected from a large tuberculin-tested, contagious abortion-free herd of cattle consisting of pedigree Shorthorn, Guernsey and Friesian cows. Individual quarter samples were obtained by a special bucket machine at regular intervals from all the cows in the herd. These samples were weighed and subjected to a variety of tests so that evidence was obtained regarding their chemical composition and their bacteriological status in connection with a possible mastitis infection. An extensive bacteriological examination was carried out in parallel with the chemical analysis and complete data are recorded relating to four to six lactations of 11 individual cows.

The records were designed not so much to indicate the gross loss in milk as to illustrate the subsequent damage to milk-secreting tissue which can result from infection of varying severity with different micro-organisms. The effect of any treatment following a clinical attack could also be assessed. Infections which have no apparent effect upon the relative yield of a quarter did not generally reduce solids-not-fat percentage or increase the electrical conductivity ; though the first few ounces of foremilk gave a Whiteside positive result. Some mild clinical attacks, even if lasting for a short time, produced a severe reduction in yield. In most cases where penicillin treatment had to be resorted to, there was an immediate fall in milk yield and a significant fall in the S.N.F. percentage. Successful treatment was not normally followed by a recovery in milk yield, either immediately or in the rest of that lactation, though the Whiteside and conductivity tests quickly returned to normal, especially in mid-lactation. There was evidence to show that severely damaged tissue was completely regenerated in the dry period so long as this was free from infective bacteria. No opinion, however, was secured to support the view that compensation takes place. Earlier observations of the authors that there is a very high new infection rate in the early dry period were confirmed. In such cases there was a marked effect on the milk yield in the following lactation. It is clear that a sub-clinical infection in one quarter will not prevent a new infection of the same type with marked clinical symptoms in another and that one type of organism may infect more than one quarter of the same udder, causing abnormalities in one instance and not in another.

N. S. B.

* **The Effect of Bacterial Infection on the Milk Yield of the Individual Quarters of the Cow's Udder.** Crossman. J. V., *et al.* (1950.) *J. Dairy Res.* **17.** 128.

* * * * *

An Egg-adapted Modified Canine Distemper Virus Vaccine*

Virulent distemper virus was adapted to grow on the chorio-allantoic membrane of chick embryos. The virus produced typical distemper in ferrets until the 26th egg pass and in later passes it immunised ferrets without producing symptoms. Growth of virus in eggs was signified by a thickening of membrane and by the production of focal lesions. Batches of dried virus from chick embryos undiluted and diluted to 1 : 100 were used to immunise 25 ferrets which were unaffected by vaccination and resisted subsequent challenge with 10^3 M.L.D. virulent virus. Four puppies, vaccinated and later challenged, remained healthy and post-vaccination sera from these puppies neutralised avianised virus in eggs to a titre 80 times the pre-inoculation titre. In trials on two mink farms, the avianised virus was harmless in itself and stopped the spread of natural distemper. Vaccinated kits were shown to be resistant to virulent virus. In 308 dogs ranging from 5 to over 20 weeks of age, vaccination under field conditions produced no serious reactions. Seventy were exposed to distemper and resisted infection, except one animal of a group of 10 exposed to the hard-pad variety of the disease.

A. W. G.

* **The Use of an Egg-adapted Modified Canine Distemper Virus Vaccine under Experimental Conditions and in the Field.** Cabasso, V. J., Burkhart, R. L., & Leaming, J. D. (1951.) *Vet. Med.* **46.** 167-175 (15 refs.).

REPORT

[**Canada :** Report of the Director of Science Service for the year ended March 31st, 1951.]

This report forms part of the report of the Minister of Agriculture for Canada for the same year, and in his introduction the Minister points out that there has been an increase of $904,063 in the expenditure of the Science Service for the year. While mounting costs are partly responsible, the increase is a reflection of the growing function of research and experiment generally, as the discovery of new materials and new techniques opens the door to still further developments. Agriculture, covering as it does the wide fields of plant and animal life, as well as the structure and chemistry of soils, farm practices, food storage and food processing, must take every advantage of what science has to offer, if the best is to be made of the available production facilities. Because of this, it is stated, the Department of Agriculture has become the largest single employer of professional skill in Canada.

The report of the Science Service for 1950-51 differs in important respects from those of previous years. Formerly, a brief introduction and summary was followed by rather extensive reports prepared by the various divisions of Science Service. Since divisional boundaries are defined in scientific rather than in agricultural terms, reporting by divisions necessarily involves the separation of items that from the point of view of agricultural interest should be together. In the main part of this report, therefore, divisional identities are virtually eliminated and in order to focus attention on agricultural problems, the report is prepared under the following headings :—

Animal Science, Plant Science, Soil Science, Insect Taxonomy and Surveys, Miscellaneous Investigations, etc.

Under the sub-heading Animal Disease it is stated that projects relating to Brucellosis in cattle and other animals are being carried on constantly. Vaccination with Strain 19 and other methods of vaccination are at present under study.

Much study has been devoted to the preparation of tuberculin, to try to obtain a product of great potency and low non-specific activity. Better producing strains have been obtained, but the specificity has not been improved greatly.

The appearance of Newcastle disease in Canada is said to have caused an enormous amount of work. Research is focused on the production of active immunity, the carrier problem, histopathological study of the brain, the antigenicity of the viruses isolated, and the changes induced in them by propagation in other hosts.

Under Insect Pests of Livestock attention has been directed to the warble fly, and in the four western provinces warble-free areas have been established. For the control of the horn fly, paralysis tick of cattle and the sheep tick simple spraying techniques have been evolved. Experiments

in British Columbia revealed that lice populations increased on experimental animals fed on a diet deficient in vitamin A. This may explain why cattle lice decrease in numbers when animals have access to first grass in the spring.

Studies on the control of biting flies were continued in co-operation with the Defence Research Board. A number of important natural enemies were observed, including parasitic and predacious insects, vertebrate and invertebrate animals and certain aquatic plants. A beginning was made in determining the importance of these in suppressing populations of pest species of mosquitoes, black flies and tabanids.

In the field of Animal Nutrition digestibility studies on different varieties of oats and the study of nitrogen metabolism and vitamins A, D and B_{12} were continued. The cobalt content of prairie hays and grains was found to be within a range of 0·05 to 0·20 p.p.m. of dry weight, while linseed-meal contained from 0·36 to 0·61 p.p.m. A level of 0·07 p.p.m. is commonly considered to be the minimum required ment for the maintenance of health in sheep.

A combined operation, in which three of the divisions of the Science Service collaborated, was undertaken to investigate the possibility of the contamination of milk with DDT, when cow stables are sprayed without directly treating either animals or feed. Analysis of a number of samples of milk and butter taken before and at intervals after spraying indicated that under these conditions the amounts of DDT residues in the milk are negligible.

F. W.

QUESTIONS AND ANSWERS

The submission of questions for inclusion in this column will be welcomed; they can relate to any aspect of veterinary work, but must be of a general nature—questions cannot be considered in which information is sought regarding diagnosis or treatment of specific cases, nor for which solely a private reply is desired. For purposes of record, each question is numbered, and those submitting questions are required to furnish (not for publication) name and address.

Answers to readers' queries represent exclusively the personal opinions of the writers, and criticism of the replies will be appreciated.

All communications should be addressed to the Editor.

Malignant Catarrhal Fever of Bovines

Q. 414.—*To what extent does malignant catarrhal fever of bovines occur in the British Isles, and are any of the newer drugs or antibiotics useful in the treatment of this disease?*

A.—(1) Malignant catarrhal fever of bovines is not nearly so common in the North of England as in the days of the heavy seasonal importations of Irish store cattle which took place in the spring and autumn.

One must be careful to distinguish between the mild type of "malignant catarrh," which is characterised by a catarrhal stomatitis, dirty mucoid discharge from eyes and nose, accompanied by a general malaise and sometimes a profuse diarrhoea, and the so-called "transit fever" with its accompanying pneumonic symptoms.

The writer has seen as many as 20 affected Irish stores out of a batch of 50, all of which recovered under symptomatic treatment. These were of the subacute type. With the reduction of imports the incidence has, of course, declined.

Sporadic cases occur in home-bred dairy cows and these are of the acute malignant catarrh type with great depression, and in some cases a dermatitis affecting the skin of the coronets and the interdigital spaces. These cases seldom, if ever, respond to treatment, which in the old days consisted in the main of dosing with quantities of brewers' yeast. Incidentally, quite a number of such cases have been reported as suspected foot-and-mouth disease.

Most of the cases in store cattle will respond to sulphanilamide therapy. The writer has not had the opportunity of trying out any of the antibiotics.

(2) The disease never was common in the respondent's (south-west) area, and it is rare now. He has seen only one case in the last two years. It was maniacal when he saw it and it was shot. He has had no opportunity of trying any of the newer drugs or antibiotics.

. . . . . .

Treatment of Hydrops Amnii in the Cow

Q. 415.—*What is considered the proper treatment for hydrops amnii in the cow?*

A.—There is no method of treatment available whereby hydrops amnii is relieved and pregnancy conserved. Efforts should be directed towards evacuating the uterus, firstly by the use of drugs, and if these fail, then by the employment of manipulative means.

Following the introduction of the synthetic oestrogens, into veterinary clinical practice during the last decade it was hoped that a cure for hydrops amnii would be available. For, in theory, by administering stilboestrol to the dam, the corpus luteum of pregnancy would regress and the usual phenomena of parturition take place. Unfortunately, this hope has not wholly materialised. Whereas cases are on record in which, following the injection of 20 to 40 mg. stilboestrol, satisfactory evacuation has occurred, there are many unrecorded instances in which such treatment has failed.

In considering the variable response obtained to stilboestrol therapy, it is necessary to recall that hydrops is not usually diagnosed until, or beyond, six months of gestation, and that by this time the corpus luteum is relatively resistant to oestrogenic drugs. Further, if luteal regression does ensue, there may be present such a degree of inertia, consequent on the severe stretching which the uterus has endured, that labour pains are absent, or subnormal, and the cervix remains undilated.

Enucleation of the yellow body *per rectum* is not practicable because the ovary containing it is beyond reach of the hand. Laparotomy could be performed and the ovary, or its corpus luteum, excised, but here again, abortion may not follow but death from haemorrhage might.

Mindful of the foregoing remarks, the following approach to the management of hydrops amnii is suggested :—

Prostrated cases should be slaughtered.

Less severe cases should be given 40 mg. stilboestrol dipropionate by intramuscular injection and strict observation maintained for the next four days. Even if abortion does not follow, cervical relaxation should be sought, and if present, the obstetrist should then try to dilate the cervix sufficiently to rupture the membranes and deliver the calf *per vaginam*.

If these efforts fail, a caesarean operation should be planned and a hysterotomy performed in the usual way.

. . . . . .

Aureomycin for Pigs

Q. 416.—*Can you advise on the use, availability and cost of aureomycin for promoting growth in pigs, in relation to saving on the cost of food?*

A.—Although pure aureomycin has been used in certain experiments, it should be pointed out that the material in question is an aureomycin-containing residue obtained during

the manufacture of the pure antibiotic. The cost of the pure product would be prohibitive, and in view of its requirement for human therapy amounts available would be inadequate. Aureomycin-containing residues have been available on a commercial scale in the U.S.A. (*e.g.*, "Aurofac,") Lederle Laboratories, 30, Rockefeller Plaza, New York, 20, N.Y.) since September, 1949, but none is available as yet in this country except for research purposes.

There is so far insufficient evidence to warrant the conclusion that pigs maintained on the feeding systems commonly used in this country would benefit substantially by the addition of antibiotics to their diet. Nor is there yet absolute data comparing the cost of aureomycin with any saving in food occasioned by pigs which receive the antibiotic utilising their food more efficiently. The precise circumstances and conditions under which aureomycin will (or will not) produce a significant and economic response are still undetermined ; it appears, however, that the antibiotic may be of definite promise where general husbandry conditions and/or diet are poor, where the incidence of scouring is high, and in the case of runt pigs.

Although the amount of aureomycin used is small (usually as an additive to meal at commercially recommended levels around 10 to 15 grammes per ton) and amounts to only about 2 per cent. of the cost of the food, it would require to be proved that its beneficial effect is superior to that of penicillin, which is produced in this country, before the Treasury would sanction its import. As an illustration, the cost of obtaining aureomycin from the U.S.A. for feeding to all the pigs in Britain for which the Ministry of Food provides rations, would be of the order of $6,000,000. Under the aegis of the Agricultural Research Council, a number of Agricultural Research Institutes and the Industry are carrying out large-scale trials covering various conditions of pig husbandry ; until the results of these are available, the A.R.C. has not found it possible to recommend that antibiotics be added to the national pig foods, or to recommend the separate sale of such substances.

Further general information on the subject, together with references to other specific publications, may be found in the following :—

1. "Aureomycin : an introduction to its pharmacology and activity." Kanegis, L. A., *et al. Vet. Med.* August, 1950 ; p. 313.

2. "Growth-promoting effects of antibiotics in animals." *Nutr. Rev.* October, 1950 ; p. 298.

3. "Antibiotics in Nutrition." Cuthbertson, W. F. J. *J. Sci. Food Agric.* No. 2. 1952 ; p. 49.

4. "The value of antibiotics for fattening pigs. I.—As supplements to normal fattening rations." Braude, R., *et al. Brit. J. Nutrit.* **5**. 1951 ; p. 8.

[*See* also the first article in this issue.—*Editor.*]

* * * * *

Correspondence

Herd Infection with Vibrio foetus

Sir,—In the "Questions and Answers" column in your issue of May 3rd, it is stated (referring to *Vibrio foetus*) that "it is only recently, however, that the infection has been considered essentially venereal."

On November 3rd, 1951, I sent to you an (unpublished*) communication on "*Vibrio foetus* in Bull Semen," in which it was mentioned that *Vibrio foetus* had been grown on culture in samples of semen from seven out of the total of 11 bulls in the Hong Kong Dairy Farm herd. It was further mentioned, as what I considered to be a noteworthy feature, that six out of the seven bulls had *never* had natural connection with a cow, all ejaculations during their lives having been made into an artificial vagina. In fact, in the case of one bull, only 10 months old, this animal had never been used except on this occasion when, for purposes of examining his semen, he was made to serve into a sterile artificial vagina.

I could not but conclude that, by whatever means those bulls contracted *Vibrio foetus*, it was certainly not by the venereal route, and I did speculate on various other possibilities whereby they could have become infected : perhaps some of your readers with more experience have ideas on the matter ?

I should say that the laboratory work in connection with those tests was done by the Hong Kong Government Bacteriologist.

Your enquirer might be interested to read an address on this subject given by Mr. J. Lofthouse last year to the Yorkshire Division (*Vet. Rec.* **63**. 125) where he cites cases treated by him with penicillin ; the discussion that followed is also interesting.

Before leaving Hong Kong in January this year, having treated all the bulls referred to with a course of penicillin, I also treated 100 females—cows and heifers—about to be mated. It has since been reported to me that, compared with the previous appallingly low conception rate of about 30 per cent., 50 per cent. of those 100 animals conceived to their first insemination after treatment.—Yours faithfully, H. C. Watson, 10, Caledon Street, George, Cape Province. *May 26th*, 1952.

* Due entirely to postal vicissitudes.—*Editor.*

IN PARLIAMENT

Foot-and-Mouth Disease: Minister's Statement

With the House of Commons in Committee of Supply on Thursday of last week, in the course of the debate on the vote for agricultural services, Mr. Tom Williams, the former Minister of Agriculture, opened a discussion on the White Paper on the review of prices and further production policy. During his speech he referred to the foot-and-mouth disease epidemic, asking the Minister of Agriculture, Sir Thomas Dugdale, if he was satisfied that the restrictions had been sufficiently drastic. Grave doubts had been expressed in many quarters on that matter. He had 100 per cent. confidence in the Ministry's veterinary service.

Sir Thomas Dugdale said that since last November the coastal counties from Yorkshire to Kent, and subsequently from Kent to Dorset, had been bombarded by foot-and-mouth disease infection from the Continent. Although there was no proof, there was very strong circumstantial evidence that birds had been carriers of the disease. The bombardment was still continuing and was likely to continue for some time in view of the position in northern France.

In nine departments immediately opposite our coast, from the Pas de Calais to Finisterre, there were about 1,400 fresh outbreaks in the first half of April and 1,700 further outbreaks in the second half of April. In addition another 2,800 occurred in the first part of May. By the middle of May there were in existence just across the Channel some 6,000 sources of infection, and all the time the peak of infection was moving westwards in northern France. The build-up of infection in northern France coincided with outbreaks in southern England and in Guernsey and Jersey.

Mr. Peart asked if the Government had made direct representations to the French Government on this matter.

Sir T. Dugdale said our veterinary advisers were always in touch with their opposite numbers on the Continent on this matter. If they were right in supposing that birds carried this infection, then no approach by a Minister or anyone else could deal with the actual flight of birds. Since April 21st there had been about 20 initial outbreaks on the south coast of England from Kent to Dorset, but these had given rise to about only 40 secondaries. When those figures were compared with the French figures they gave a striking indication of the effect of the present restrictions to check the spread of the infection.

Slaughter Policy to Continue

The position in the Midlands and Scotland, which was causing some anxiety, was improving, although there were two new cases yesterday in a new area in Derbyshire. The only infected area in Scotland was at Dumfries, but further outbreaks must be expected. The origin of these cases was still obscure in spite of the most exhaustive enquiries.

Since November 14th, 1951, when the big outbreak started, there had been 430 outbreaks. At present there were 14 infected areas in England and two in Scotland. One of the Scottish areas had been revoked and six were to be contracted to-night in England. Two controlled areas were in operation in England. One was on the south coast to guard against rapid spread of the disease from further infection from the Continent. The other was in the Midland counties to give additional protection to the extensive free part of the country.

The Agricultural Improvement Council had considered the matter of control, and endorsed the view that in the circumstances in Great Britain it was still necessary to follow the slaughter policy

which arrested the multiplication of the virus as rapidly as possible. There were certain vaccines which provided reasonable immunity against foot-and-mouth disease, but the principal objection to new methods of immunisation—leaving aside the question of cost—was that they did not act quickly enough to prevent the disease spreading. The Ministry was deeply interested in the further development of vaccination, but for the present he could not take the risk of abandoning in any degree the present slaughter policy.

Tribute to Ministry's Veterinary Staff

Towards the conclusion of his statement the Minister said: "I think the House would also wish me at this stage to pay a tribute to the veterinary field staff of the Department of Agriculture to whom the right hon. Gentleman referred. For nearly seven months now many of them have been working long hours for seven days a week. The farming industry, and all of us, owe them a debt of gratitude for their efficiency and devotion to duty over a long period during which they have been under great strain, and a great deal of responsibility has rested on their shoulders. I should like also to thank the Governments of Northern Ireland and Eire who responded so quickly and generously to the request of the Ministry of Agriculture for a loan of veterinary staff."

Mr. Edward Davies asked whether the Minister would be able to meet demand in terms of meat and milk as a result of the outbreaks.

Sir T. Dugdale said about half the beef and a very large proportion of pigs and sheep were salvaged for human consumption. The stand-still orders which had been imposed on this occasion were over wider areas and for longer periods than ever before, and infected areas had been adjusted to provide wider areas of protection. In general these methods had been successful in checking the spread of disease. He was satisfied that everything possible was being done to fight the disease. Since the outbreak started the cost of compensation had been about £1,500,000.

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Scientific Research

In the House of Lords on June 11th Viscount Samuel asked the Government whether they had any statement to make on the use made by industry and agriculture of the results of scientific research and the policy they proposed to adopt to promote the higher education of technologists. The noble lord, who moved for papers, said that no country could flourish economically or be in a position to defend itself militarily unless it kept fully abreast with the developments of science. How did the question of the establishment of a British Science Centre in London stand? It had been stated that a site had already been agreed, although its location was regarded as a private matter. The late President of the Royal Society in a public speech said he hoped that the centre would be housed in a building worthy to look Somerset House in the face.

Lord Woolton, Lord President of the Council, referring to the question about the Science Centre, said that a site immediately below Waterloo Bridge and facing Somerset House had been reserved by the L.C.C., which was the planning authority, but at this stage he could give no assurance about when the Science Centre would come into existence. But he would use whatever influence he had to secure that when it did it would take on a noble setting.

A striking development in medical research at the present time was the application of new knowledge in the field of atomic physics to the treatment of cancer. New radio-active substances had become available for trial in the treatment of this disease and also new machines producing radiations of great strength. These instruments were very costly, and this line of research, therefore, involved expenditure on a scale not previously necessary in the field of medical investigation. What success would attend this research, time alone would show.

In the sphere of fundamental research Great Britain still led the world, and a recent example, for which we had had world-wide acknowledgment, was the development of radar. At present the department was assisting fundamental research into nuclear physics and radio astronomy.

But he was still not satisfied that British industry was making sufficient use of science or was properly staffed to do so. There was a need for some general review of the effectiveness of current arrangements for ensuring that the results of research made their contribution to the development of the British economy, and he was asking the Advisory Council on Scientific Policy, under the chairmanship of Professor A. R. Todd, to look into this question.

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QUESTIONS

Animal Diseases Act (Administration, Scotland)

Mr. Boothby (June 10th) asked the Secretary of State for Scotland what new arrangements have been made for the administration of the Diseases of Animals Act in Scotland.

Mr. J. Stuart: No major changes in the arrangements have been made since 1946. At that time, a Deputy Chief Veterinary Officer was appointed to take charge of the Veterinary Service in Scotland. The object was to improve the machinery for the uniform control of rapidly spreading infectious diseases and to ensure the closest possible liaison between England and Scotland in all matters relating to animal health. This liaison is essential to efficient administration throughout the country as a whole in our aim to eradicate such diseases as foot-and-mouth, and bovine tuberculosis.

NOTES AND NEWS

Diary of Events

June 24th.—Meeting of the Society for the Study of Animal Breeding, at the Wellcome Research Institute, 183-193, Euston Road, London, N.W.1, 2.15 p.m.

June 25th.—B.V.A. Meetings at 36, Gordon Square, London, W.C.1—Grassland Conference Sub-committee, 10.45 a.m.; Technical Development Committee, 1.30 p.m.

June 25th.—Annual Meeting of the North of Scotland Division, B.V.A., at Aberdeen (Northern Hotel), 2.30 p.m.

June 27th.—Meeting of the Yorkshire Division, B.V.A., at Leeds (Hotel Metropole), 2.30 p.m.

July 2nd.—Meeting of the North Wales Division, B.V.A., at the School of Agriculture, Memorial Buildings, Bangor, 2 p.m.

July 7th.—Annual General Meeting of the Association of Veterinary Teachers and Research Workers (Northern Region), at the Veterinary Field Station, Leahurst, Neston, Wirral, 11 a.m.

July 9th.—Meeting of the Editorial Executive Committee, B.V.A., at 36, Gordon Square, London, W.C.1, 2.30 p.m.

Sept. 8th—13th.—Seventieth Annual General Meeting and Congress of the British Veterinary Association, at Harrogate.

R.C.V.S. Examinations

June 26th/27th.—R.C.V.S. Membership Written Examinations.

Council and Committee Meetings of the B.V.A.

The next quarterly meetings will be held in London on July 21st, 22nd and 23rd, in the following order:—

July 21st.—Monday, 12 noon, Parliamentary and Public Relations Committee; 2.30 p.m., Organising Committee.

July 22nd.—Tuesday, 10 a.m., Veterinary State Medicine Committee; 12 noon, Home Appointments Committee; 2 p.m., General Purposes and Finance Committee.

July 23rd.—Wednesday, 11 a.m., Council Meeting.

Technical Development Committee, B.V.A.

Members are asked to note that the time of the Technical Development Committee meeting fixed for June 25th has been changed from 2 p.m. to **1.30 p.m.** at 36, Gordon Square, W.C.1.

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"Laboratory Aids to Clinical Diagnosis"

[Prepared by the Technical Development Committee of the Association]

This booklet is being circulated to all members with this issue of *The Veterinary Record* (June 21st).

In the foreword Sir Thomas Dalling draws attention to the great assistance which the clinician can derive from laboratory tests—some simple, some more elaborate—which are complementary to clinical diagnosis and which are an integral part of modern veterinary practice.

The intention of this booklet is to provide information in a concise form to guide in the establishment and use of limited but adequate laboratory facilities well within the scope of a practising veterinary surgeon.

Additional copies may be obtained by members at the price of 4s. 6d. post free, this being also the charge to students for single copies. The price of this publication to non-members is 9s. 6d.

PERSONAL

Dr. S. Jamieson's Appointment in New Zealand

Dr. S. Jamieson, M.R.C.V.S., D.V.S.M., who has been on the staff of the Department of Agriculture, University of Aberdeen, for the past two years, is taking up an appointment as Veterinarian in the Livestock Division of the New Zealand Department of Agriculture.

In Aberdeen Mr. Jamieson was responsible for the development of the V.I. laboratories at Mill of Craibstone and his two main pieces of work there were concerned with black disease in sheep and copper pine in calves. His appointment in the University was concerned with the development of a teaching unit, for science students, in Bacteriology.

A correspondent writes: "The good wishes of many North of Scotland stockowners and of his former colleagues will accompany Dr. Jamieson when he sails for his new country at the beginning of September."

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Appointment.—The appointment of Mr. W. Ronald Kelly, M.R.C.V.S., to the Chair of Veterinary Medicine and Pharmacology in the Veterinary College of Ireland, Dublin, has recently been announced. Professor Kelly is a native of the Isle of Man and a graduate of the Dublin College. He therefore returns to his Alma Mater, where he had a very brilliant career, having been awarded 12 meda's during his course for class distinctions in different subjects; he was also awarded the Walley Memorial Prize in 1942, and the second Fitzwygram Prize in 1943, by the Royal College of Veterinary Surgeons in competition with all the students in the affiliated veterinary colleges of Great Britain and Ireland.

Since qualifying in 1943 he has revealed further evidence of his abilities by his achievements in the different fields in which he has been engaged. For four years he was on the scientific staff of the Wellcome Research Laboratories, where he carried out very successful research work on mastitis, infertility, trichomoniasis and nutritional problems under the guidance of Dr. R. F. Montgomerie and Mr. S. L. Hignett. He then took up clinical work, and in order to familiarise himself with general veterinary practice he spent over two years with Mr. W. Kendrick in one of the best-known practices in Cheshire. In 1949 he was appointed Lecturer in Veterinary Medicine in the University of Liverpool, where he has since been engaged—in association with Professor J. G. Wright—in teaching clinical medicine, and in the organisation of that well-known veterinary field station at Leahurst. He is also one of the Internal Examiners in Veterinary Medicine for the University of Liverpool and the Royal College of Veterinary Surgeons.

Professor Kelly therefore brings with him, to his new post, a wealth of knowledge and experience, and we hasten to congratulate him and to wish him every success in the task which he has undertaken.

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Births.—Arnold.—On May 16th, 1952, to Prudence, wife of Roger Arnold, B.SC., M.R.C.V.S., of the Department of Agriculture, Hope, Jamaica, a daughter—Penelope Suzan.

McFerran.—On June 11th, 1952, to Rosali, wife of A. M. McFerran, M.R.C.V.S., of West Ayton, Scarborough, a sister for Ian.

Miller.—On April 6th, 1952, at Akaroa, New Zealand, to Nancy, wife of Alfred H. Miller, M.R.C.V.S., a son—Hugh Campbell.

Skinner.—On June 13th, 1952, to Mary, wife of Hubert H. Skinner, M.R.C.V.S., of Pirbright, Surrey, a son—Robert Mark.

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Marriage.—Grose—Green.—On April 26th, 1952, at St. Saviour's Church, Leicester, William Lloyd Grose, of Northampton, to Mary Kimbell Green, M.R.C.V.S., of Leicester.

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Veterinarian President of Herd Book Society.—We are interested to learn that Mr. T. A. R. Chipperfield, M.R.C.V.S., of Crowborough, who is this year's President of the Sussex Division of the B.V.A., has been elected President of the Sussex Herd Book Society, after having served as Chairman of the Council for 1949-50 and 1950-51. He has been breeding Sussex cattle since 1945 and during that time has exported breeding heifers to S. Rhodesia and to Texas (1951). Mr. Chipperfield is an official judge of the breed and has officiated at the Sussex County Show (1949) and the Royal Counties Show (1951).

Hon. Consultant Veterinary Surgeon to the N.G.R.C.—Mr. E. J. Heather, M.R.C.V.S., D.V.S.M., of Oxford, has accepted an invitation by the National Greyhound Racing Club to be Honorary Consultant Veterinary Surgeon to the Club. Mr. Heather has been veterinary surgeon at the Oxford Greyhound Stadium since its opening.

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Zurich Doctorate for Professor F. H. Manley.—Professor Frank H. Manley, M.V.SC., M.R.C.V.S., Adviser in Veterinary Bacteriology to the Iraq Government on behalf of the Food and Agriculture Organisation of the United Nations, has received the degree of Doctor of Veterinary Medicine from the University of Zurich. The degree was awarded in part for original work on the genus Proteus. Professor Manley, a graduate of Liverpool University, is on leave from the School of Veterinary Medicine, Auburn, Alabama, U.S.A.

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R.C.V.S. OBITUARY

MacHattie, Charles, The Cottage, West Church Street, Buckie, Banffs. Graduated December 17th, 1921. Died June 10th, 1952; aged 55 years.

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LEGAL NOTES

Successful R.C.V.S. Prosecution at Bournemouth

At Bournemouth Magistrates' Court, on May 31st, Miss Phyllis Vernon, of Stafford Road, Bournemouth, was fined 10s. on each of nine summonses and ordered to pay £3 3s. costs for practising as a veterinary surgeon without being registered—a total of £7 13s.

The cases concerned the treatment by the defendant of an Alsatian dog named "Grey Wolf," belonging to Mr. G. E. Shearing, of Dean Park Road, which died two days after final treatment by the defendant.

Miss Vernon at first pleaded not guilty to 10 summonses, all concerning her treatment of the same dog, but subsequently she pleaded guilty to nine of the summonses, dated February 2nd to February 10th inclusive, and the 10th summons was not proceeded with.

Mr. Conrad Oldham, prosecuting for the Royal College of Veterinary Surgeons, said that in the interests of dumb animals it had been provided that it would be a breach of the law for anyone to treat them without the proper qualification. The animal had to be protected because it was not in a position to make a voluntary decision on taking the risk of being attended by someone who was unqualified. The maximum penalty for each offence was £100.

Mr. G. H. Hugh de Wyllys, Solicitor, of Avenue Road, Bournemouth, produced the official register of the Royal College of Veterinary Surgeons, in which, he said, the defendant's name did not appear.

Terence George Shearing, of Dean Park Road, said he took his father's Alsatian dog to Miss Vernon, to whom they had been recommended, to be treated for eczema on the neck. She put ointment on it and a week later gave him medicine for the dog. He took the dog to her every night from February 2nd to February 10th, when defendant said it was getting better and he need not bring the animal again. She had previously shaved the dog's neck. He paid her 5s. on account. On February 11th he took the dog somewhere else.

George Edward Shearing, of Dean Park Road, owner, said the dog was taken to Miss Vernon for the eczema, which had cleared up by February 10th. On the day before the dog was watering at the eyes. On February 11th he called in someone else.

Mr. Harold G. Walker, for defendant, said the only treatment given by defendant was for eczema, for which the animal was brought to her. She did not appreciate that giving treatment for eczema was contrary to the provisions of the Veterinary Surgeons Act, 1948. It was not commonly known that the provisions of the Act were so far-reaching. Last year she gave an undertaking to the Royal College of Veterinary Surgeons that she would not practise. She did not realise that what she had done in that case was within the provisions of her undertaking. She apologised for what she had done and was prepared to renew her undertaking in the widest terms.

XUM

Foot-and-Mouth Disease

In our Parliamentary columns is recorded the statement on the foot-and-mouth disease position made by the Minister of Agriculture in the House of Commons on Thursday of last week, in the course of which Sir Thomas Dugdale said that while the Ministry was deeply interested in the further development of vaccination, for the present he could not take the risk of abandoning in any degree the slaughter policy.

The confirmation of new outbreaks involves the inclusion of London in a restricted area; also the decision to abandon or curtail a number of important agricultural shows. Both the Royal and the Royal Highland Show Committees have cancelled the cloven-hoof classes.

At mid-week the total number of outbreaks since November 14th was 456, the number of animals slaughtered being 27,322 cattle, 19 042 sheep, 10,331 pigs and 38 goats. Since our last issue further outbreaks have been confirmed in Berkshire, Dumfriesshire, Kent, Kircudbrightshire, Staffordshire and Sussex, and up May 24th, 1952, £1,531,832 has been paid out in compensation.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

ANTHRAX:

Hants.—Stanford Meadow, Eastleigh, Southampton (June 11th).
Somersetshire.—Melbury Farm, Polsham, Nr. Wells (June 9th).
Wilts.—Lypgate Farm, Kington Langley, Chippenham (June 9th); Bowden Farm, Burbage, Marlborough (June 11th).
Yorks (W.R.).—Blackhill Farm, Bramley, Rotherham (June 9th); Netherfield Farm, Middlestown, Wakefield (June 11th).

FOOT-AND-MOUTH DISEASE:

Ches.—New Farm, Broomhall (June 10th).
Derbyshire.—Fivewells Farm, Taddington, Nr. Buxton, Derby (June 11th).
Dumfriesshire.—Smallrigg, Lochmaben, Dumfries (June 9th); Abbey Farm, and Hutton Piggery, Holywood, Dumfries; Bengall Hill, Lockerbie, Dumfries (June 10th); Drysesdale Gate, Lockerbie, Dumfries; Con Heath Farm, Glen Caple, Dumfries (June 11th); Nether Holm, Kirkmahoe, Dumfries; Prospect Hill, No. 19 Holding, Terregles, Kirkcudbright (June 12th); Nether Colinhurst, Ecclefechan, Lockerbie, Dumfries (June 13th).
Kent.—Holmans Farm, Bromley Green Road, Upper Ruckinge, Ashford (June 9th); Pages Estate, Slades Green, Erith (June 12th).
Shrops.—Oakley Park Farm, Market Drayton (June 9th).
Sussex (E.).—Catsfield Place Farm, Battle (June 11th).

FOWL PEST:

Essex.—Lyntondale, London Road, Billericay (June 11th).
Sussex (E.).—Ovingdean Hall Farm, Ovingdean, Brighton (June 9th); Rout Farm, Warninglid, Haywards Heath (June 11th).

SWINE FEVER:

Berks.—The Moor, Star Street, Caversham (June 11th).
Bucks.—Clarendon House Farm, Prestwood, Gt. Missenden; The Den Piggeries, Beaconsfield Road, Farnham Common (June 12th).
Durham.—Cemetery Road Piggeries, Southwick, Sunderland (June 12th).
Essex.—Ross Dean Bungalow, Leaden Roding, Dunmow (June 10th).
Kent.—The Marlings, Turnden Lane, Cranbrook (June 9th).
Lincs (Holland).—Cherryholt Farm, Gosberton (June 10th).
Lincs (Lindsey).—Burgh Road Piggeries, Skegness (June 10th).
Oxford.—The Bell Inn, Lower Heyford (June 11th).
Surrey.—Borroughs Lea, Shere, Guildford (June 11th).
Warwicks.—Smithy Cottage, Styvechale Croft, Coventry (June 13th).
Worcs.—Spout Farm, West Hagley, Stourbridge (June 13th).

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ROYAL COLLEGE OF VETERINARY SURGEONS

DIPLOMA IN VETERINARY STATE MEDICINE

On the results of the Examination held by the Royal College of Veterinary Surgeons in Edinburgh from June 5th to 10th, 1952, the following candidates have been awarded the Diploma in Veterinary State Medicine: John Marshall Duncan, Arthur Lawrence Ogden, James M'Connachie Swanney.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

R.C.V.S. COUNCIL ELECTION

Sir,—Please allow me, through your columns, to express my very sincere thanks to all those who saw fit to entrust their vote to me in the recent Council elections. My appreciation is none the less because my candidature was unsuccessful, and to them I would say that if an opportunity presents itself for me to allow my name to go forward at some future date, I shall do so less reluctantly than on this the first occasion.—Yours faithfully, W. T. ROWLANDS, Argoed, Upper Garth Road, Bangor, Caerns. *June 12th*, 1952.

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CYSTIC OVARY IN A CROSSBRED COLLIE BITCH

Sir,—Your readers may be interested in the dimensions of a cystic ovary removed from the abdomen of an eight-year-old crossbred collie bitch. The specimen weighed 6 lb. 10 oz. and measured 2 feet round in one direction and 1 foot 7 inches in the other. The bitch is making a satisfactory recovery. One is tempted to ask "Is this a record!"—Yours faithfully, N. R. TURNBULL, 65, Worting Road, Basingstoke. *June 13th*, 1952.

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TUBERCULOSIS—BOVINE/HUMAN RELATIONSHIP

Sir,—With due respect for Mr. Pitcher's tenacity in presenting his arguments, for the advisability of the population of this country to drink milk from tuberculous cows, I submit that the elaborate figures quoted in his letter, dated May 14th, are of no statistical significance whatsoever.

The advances that have been made in the detection of tuberculosis in humans, during the 25 year interval between the periods for which he quotes figures, are of sufficient magnitude to make comparisons between these notification totals quite unacceptable.

There are many other factors as well that would have an important bearing on the figures quoted—quite apart from the 30 or so counties in England and Wales, not included in the figures, which are supplying large quantities of milk for liquid consumption in those counties which were listed.

In my opinion Mr. Pitcher's arguments adversely reflect on professional thinking, in the view of outside observers, at a time when we are endeavouring to take an ever-increasing rôle in the programmes of improving the health of the human and animal populations of this country.—Yours faithfully, J. P. FRAPPELL, M.R.C.V.S., Cattle Breeding Centre, Longford, Gloucester. *June 13th*, 1952.

Sir,—With reference to the extract from *The Daily Telegraph* of June 14th, 1952,• it may seem a little cruel to break in on the celebrations of the victorious Vikings, but perhaps, after a decent interval, Mr. Pitcher will explain the nature and extent of the calamity about to descend on the Danish people as a result of the elimination of bovine tuberculosis from their herds. He might even be able to persuade them to accept a consignment of our affected cattle as a corrective—unless he thinks that would be too generous a gesture in view of our own requirements!—Yours faithfully, ESMOND BROWN, Lan House, Weston Road, Bath. *June 15th*, 1952.

•DENMARK WINS FIGHT AGAINST T.B. IN CATTLE

60-YEAR CAMPAIGN

From Our Agricultural Correspondent

COPENHAGEN.

The Vikings to-day celebrated another victory, but this time it was a bloodless one. They have completely conquered bovine tuberculosis among their famous cattle herds. Denmark thus becomes the first European country to eliminate this scourge among cattle.

It has been an uphill fight extending over 60 years, but to-day the Danes can claim that in future all butter and cheese sent overseas will be guaranteed to have been made from milk free from bovine tuberculosis. . . .

Although the number of cattle in Denmark is only about one-quarter of the British total, it seems that we are about 20 years behind in the fight against bovine tuberculosis.

In Wales and Scotland the number of attested herds accounts for more than 50 per cent. of the total, but in England the percentage is no more than 28, making a total of little more than 34 per cent. for the whole country. Yet only 30 years ago at least 80 per cent. of the cattle in Denmark were suffering from bovine tuberculosis.

Denmark claims to-day to have a smaller percentage of its population of 4 000 000 suffering from tuberculosis than any other nation. It is gradually closing its sanatoria for want of patients and the other day it was decided to fill unoccupied beds by admitting British children brought here by voluntary funds.

BRITISH VETERINARY ASSOCIATION

HARROGATE CONGRESS, 1952

Provisional Programme

Sunday, September 7th

8-10.30 p.m. "At Home," given by the Yorkshire Division, B.V.A., at the Hotel Majestic.

Monday, September 8th

10.0 a.m. Civic Welcome by His Worship the Mayor of Harrogate (Councillor A. V. Milton, J.P.) at the Royal Hall.

10.30 a.m. Official Opening of the Exhibition of Surgical Instruments, Drugs, etc., by the President, B.V.A., in the Royal Hall.

2.30 p.m. *Address :* "Disease and Animal Husbandry as dealt with by the Food and Agriculture Organisation of the United Nations," by Dr. Kestevan, Chief of the Animal Production Branch, Food and Agriculture Organisation of the United Nations.

8.30 p.m. Civic Reception and Dance given by the Mayor and Mayoress of Harrogate at the Corporation Lounge Hall, Parliament Street.

Tuesday, September 9th

9.30 a.m. *Paper :* "Technical and Practical Application of Electro-therapy in the Equine," by Mr. Norman Gold, M.R.C.V.S., of Redditch. Opener : Dr. A. C. Fraser, B.V.Sc., M.R.C.V.S., of Lambourn.

10.15 a.m. Annual Meeting of V.V.B.F. Ladies' Guild.

2.15 p.m. *Paper :* "Electrocardiography in the Horse" (illustrated by lantern slides), by Mr. W. C. Miller, M.R.C.V.S., F.R.S.E., and Lieut.-Colonel J. Hickman, M.R.C.V.S., Animal Health Trust. Time will be allowed for questions.

Films of Operative Procedures, prepared by the Royal Veterinary College.

Ladies' Excursion. Details not yet fixed.

8.30 p.m. President's Reception and Dance at the Hotel Majestic.

Wednesday, September 10th

9.30 a.m. *Paper :* "Feline Enteritis," by Dr. A. W. Gledhill, B.A., M.R.C.V.S., National Institute for Medical Research, Mill Hill. Opener : Miss W. M. Brancker, M.R.C.V.S., of Sutton Coldfield.

12 noon Last meeting of 1951-52 Council, in Royal Hall.

2.30 p.m. Congress Photograph in Royal Hall Gardens.

3.0 p.m. Annual General Meeting in Royal Hall.

7.30 p.m. for 8 p.m. Annual Banquet at the Hotel Majestic.

Thursday, September 11th

9.30 a.m. *Paper :* "Q Fever (The Domestic Animal as a Source of Infection to Man)," by Dr. G. Slavin, M.R.C.V.S., Senior Research Officer, Ministry of Agriculture and Fisheries, Weybridge. Opener : Dr. H. T. Findlay, Public Health Laboratory Service, Wakefield.

Paper : "*Vibrio foetus* Infection in Cattle," by Mr. J. R. Lawson, M.R.C.V.S., Senior Research Officer, Ministry of Agriculture and Fisheries, Weybridge. Opener : Mr. G. Seaton Powley, M.R.C.V.S., of Wetherby.

AFTERNOON : Free for golf, tennis, bowls, etc.

Congress Excursion. Details not yet fixed.

8.30 p.m. Ladies' Guild Dance.

Friday, September 12th

9.30 a.m. *Paper :* "Modern Insecticides, and Ectoparasite Control," by Mr. W. Downing, F.R.C.V.S., Mr. H. E. Harbour, B.A., M.R.C.V.S., and Mr. L. C. Stones, B.A., M.R.C.V.S., Cooper Technical Bureau. Opener : Mr. I. W. Montgomery, B.V.Sc. (Syd.), I.C.I. of Australia and New Zealand.

2.30 p.m. Repeat showing of Cine-films, in colour, of various major operations on small animals carried out at the Royal Veterinary College and Hospital, London (and as presented by Mr. G. C. Knight, F.R.C.V.S., at the Eastbourne Congress).

2.30 p.m. Sectional Meeting : A meeting of the Association of Veterinary Teachers and Research Workers in the Council Chamber, Municipal Building (opposite Royal Hall).

EVENING : Theatre Party. Details not yet fixed.

Saturday, September 13th

10.0 a.m. Closing meeting of the Congress, followed by First Meeting of 1952-53 Council, in the Royal Hall.

Throughout the Congress there will be an Exhibit of Specimens by the Veterinary Laboratory, Ministry of Agriculture, in the Royal Hall.

XUM

BRITISH VETERINARY ASSOCIATION CONGRESS, 1952

September 8th to 13th

RECOMMENDED HOTELS AT HARROGATE

The following is a list of recommended hotels at Harrogate, giving particulars of accommodation, charges, etc. Members are advised to make reservations *as soon as possible* direct to the hotel of choice. The Majestic is the headquarters hotel for the period of the Congress.

If any member requires information regarding guest or apartment house accommodation in Harrogate, this can be obtained direct from the Conference Secretary, Harrogate Corporation, Royal Hall, Harrogate.

Name	Address	Telephone number	Garage	Total number of guests	Full board (three days or more) per day	Full board (less than three days)	Bed and breakfast (three days or more)	Bed and breakfast (less than three days)
Beechwood Court	Cold Bath Road	—	Yes	150	18/- to 22/-	—	12/6	—
Berkeley	35, Victoria Avenue	430811	Nearby ; large yard	25	21/- to 25/-	—	15/-	—
Boston	Swann Road	2918	Open yard	30	18/6	20/-	13/6	15/-
Britannia Lodge ...	Swann Road	4206	Nearby	16	21/-	—	12/6	—
Brompton House...	94, King's Road	6128	Open yard	16	18/- to 21/-	—	13/6	—
Cairn Hydro Hotel	Ripon Road	4005	Yes	240	27/6 to 35/-	—	21/-	—
Cecil	Valley Drive	2148	No	80	25/-	—	15/-	—
Claremont... ...	Victoria Avenue	233311	No	80	24/-	—	—	—
Clarendon ...	27, West Park	447811	Yes	25	25/-	—	17/6	—
Dirlton	23, Ripon Road	6662	No	80	17/- to 20/-	—	12/6	—
Eversfield	1, Swann Road	204511	Yes	14	27/6	27/6	15/-	—
Fernlea	Swann Road	5952	No	16	21/-	—	12/6	—
Granby	Granby Road	3046–8	Yes	100	30/- to 35/-	—	21/- to 25/-	—
Grand	Cornwall Road	4631	Yes	300	35/- to 47/6	—	25/- to 32/6	—
Grange	West Stray	2656	Adjoining	100	21/- to 25/6	—	12/6 to 14/6	—
Green Park ...	Valley Drive	4681	Nearby	80	25/-	—	15/- to 17/6	—
Kensington ...	Valley Drive	2787	No	50	21/- to 25/-	—	15/-	—
Kirksyde	St. Mary's Walk	4472	No	60–70	21/- to 24/-	—	14/6 to 16/6	—
Knowle	Coppice Drive	2539	Yes	20	21/- to 25/-	—	15/-	—
Langham	Valley Drive	234711	No	80	25/-	—	15/-	—
Majestic	Ripon Road	2261	Yes	300	49/-	—	27/6	—
Metropole ...	Valley Drive	593211	No	32	22/6	25/-	15/-	—
Mount Edgecumbe	103–105, Valley Drive	237211	Open yard	30	21/-	—	15/-	—
North Eastern ...	Station Square	4657	No	40	25/-	—	16/-	—
Octagon	Valley Drive	2611	No	36	22/6	—	15/-	—
The Old Swan ...	Swann Road	4051	Yes	300	25/- to 35/-	—	21/- to 25/-	—
Prince of Wales ...	West Park	6675	Yes	210	30/- to 42/-	—	21/- to 30/6	—
Prospect	Prospect Place	5071	Adjoining	150	27/6 to 38/-	—	20/- to 27/6	—
Ridings	Springfield Avenue	2602	No	25	21/-	—	—	—
Riversdale ...	17–19, Valley Drive	6193	No	32	21/-	—	14/6	—
Russell	Valley Drive	3134	Nearby	80	25/- to 30/-	—	16/6 to 17/6	—
Somerset	Parliament Street	450111	Yes	17	25/-	—	16/6	—
Studley	Swann Road	6007–9	No	28	30/-	—	—	—
Valley Gardens ...	Valley Drive	3675	No	70	25/-	—	15/-	—
West Park ...	West Park	231011	Yes	25	25/-	—	15/-	—